

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended) An optical functional waveguide comprising:
a substrate;
a clad formed on said substrate;
a core which is formed in said clad and serves as an optical path for propagating light;

a plurality of lens-shaped groove structures formed so as to align at a predetermined interval along the optical path and fragmentize the optical path and being filled with a material having a refractive index temperature coefficient different from that of said core; and

a heater electrode interposed between said plurality of groove structures provided along the optical path for controlling a temperature of said material and a divergence angle of the propagating light.

Claim 2 (Canceled)

Claim 3 (Previously Presented) An optical functional waveguide according to claim 1, wherein at least one of the end faces of said plurality of groove structures is tilted from a position perpendicular to the optical path.

Claim 4 (Original) An optical modulator comprising the optical functional waveguide according to claim 1 and modulating amplitude or phase of light.

Claim 5 (Previously Presented) An arrayed waveguide grating comprising the optical functional waveguide according to claim 1 in a slab waveguide.

Claim 6 (Previously Presented) A dispersion compensation circuit comprising the optical functional waveguide according to claim 1 in the vicinity of a coupling portion that two arrayed waveguide gratings are coupled to each other in a cascade.

Claim 7 (Previously Presented) A dispersion compensation circuit comprising:
a mirror provided in a waveguide and arranged in the vicinity of a spectrum
plane; and
the optical functional waveguide according to claim 1 arranged in the vicinity of
said mirror.

Claim 8 (Canceled)

Claim 9 (Previously Presented) An optical functional waveguide according to
claim 1, wherein said groove structure is provided at a slab waveguide side of a
coupling portion of the slab waveguide and a single mode waveguide.

Claim 10 (Canceled)

Claim 11 (Currently Amended) An optical functional waveguide comprising:
a substrate;
a clad formed on said substrate;
a core which is formed in said clad and serves as an optical path;
a plurality of wedge-shaped groove structures formed so as to align at a
predetermined interval along the optical path and fragmentize the optical path and
being filled with a material having a refractive index temperature coefficient different
from that of said core; and
a heater electrode means interposed between said plurality of groove structures
provided along the optical path for controlling a temperature of said material and a
guide direction of light.